DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 4-6 and 12-13 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Examiner could find no support for the newly claimed material be “large-diameter” or “large mass”.

Claims 12-13. It appears that the values of 0.1 and 0.05 were random points picked from workable ranges. There is nothing which reasonably suggests applicants considered these values to be part of the invention at the time of the invention. Based on tables 1-2 it appears applicant only has support for values such as 0.0052 and 0.0009 for the core displacement ratio, and values 0.0050, 0.0031, etc. for the deformation ratio.

There is no support for the claim 15 limitation that the insulation surrounds an upper portion. Examiner assumes that this "upper portion" limitation was derived from the drawings. However the drawings are clearly not to scale. One would realize that

the furnace tube figure 1 has a much-shortened length, given that the length of the preform could not fit into the upper section above the furnace.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 4-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear what the standards for “large-diameter” and “large-mass” are. There is no discussion of such in the specification as filed, thus one would not be able to determine what is meant by these terms.

Claim Rejections - 35 USC § 103

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 3-11 and 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamio US 2002/0056292 in view of Sarkar 4599098, Walczak 2003/0221459, Glodis 6105396 and Shimotakahara 2003/0084686.

Figure 1 of Kamio clearly shows sintering material 12 by lowering the base material into a heating furnace (24+26). It moves through a region from the upper edge of insulating member 24 to an upper edge of heater 26.

Kamio does not indicate the 4.5 hour limitation or that the region is a 'preheated' region. [0061] of Kamio discloses that the temperature of the heater is controlled to be 1600 C, but it not stated when it begins. It would have been obvious to have the furnace begin prior to moving it down so as to save the time of heating the glass.

Given that the heating to temperature occurs prior, during or after the start of the movement (i.e. only three options) the generic teaching of heating reasonably covers all three timing possibilities. Or in terms of the Supreme Court decision in KSR, given only three possibilities, it would have been obvious to try each of them.

Still further, it would have been obvious to repeat the Kamio process to make as many preforms as possible. And thus it would have been obvious to keep the furnace at temperature, so as to reduce energy consumption associated with cooling to room temperature between repeats, and to save time.

Examiner notes there are other common sense reasons as to why to preheat a furnace – there is nothing in the specification that indicates that preheating a region was considered to be inventive.

Thus given the furnace is preheated, by radiation convection and/or conduction, the region above the heater would inherently and necessarily be preheated.

It is Walczak discloses it is known to preheat in the preform consolidation art: [0078] and [0082].

As to the 4.5 hour limitation. Sarkar teaches the downfeed rate is a critical parameter and that and the larger the preform, the lower the necessary feed rate: col. 9, lines 26-32. Sarkar discloses a feed rate of 2 mm/min, which is not all that much larger than applicants 1.48 mm/min. disclosed at table 1.

Walczak at [0073] discloses a preferred sintering time of 4-6 hours, but that varies depends on the size, density, composition and temperature.

And Shimotakahara discloses at [0027] a sintering time of 6-12 hours.

Glodis is cited to show that economy of scale is an important consideration in the fiber preform art: col. 3, lines 25-35. That is: the larger the preform, the lower the cost per meter of fiber.

Thus it would have been obvious to make the preform as large as possible in the Kamio process to make the fiber more cheaply, and to perform routine experimentation on the speed of movement and duration. Examiner notes that speed and duration and size are clearly interrelated. If you double the length of a preform and keep the speed the same, it will take twice as long to pass through the furnace, but by doubling the speed one can keep the duration constant. The speed and duration are both disclosed as being result-effective variables.

2144.05 [R-1] Obviousness of Ranges
See MPEP § 2131.03 for case law pertaining to rejections based on the anticipation of ranges under 35 U.S.C. 102 and 35 U.S.C. 102/103.

II. OPTIMIZATION OF RANGES
A. Optimization Within Prior Art Conditions or Through Routine Experimentation
Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) (Claimed process which was performed at a temperature between 40°C and 80°C and an acid concentration between 25% and 70% was held to be prima facie obvious over a reference process which differed from the claims only in that the reference process was performed at a temperature of 100°C and an acid concentration of 10%.); >see also Peterson, 315 F.3d at 1330, 65 USPQ2d at 1382 ("The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages.");< ** In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969) (Claimed elastomeric polyurethanes which fell within the broad scope of the references were held to be unpatentable thereover because, among other reasons, there was no evidence of the criticality of the claimed ranges of molecular weight or molar proportions.). For more recent cases applying this principle, see Merck & Co. Inc. v. Biocraft Laboratories Inc., 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989); In re Kulling, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); and In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997).
B. Only Result-Effective Variables Can Be Optimized
A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) (The claimed wastewater treatment device had a tank volume to contractor area of 0.12 gal./sq. ft. The prior art did not recognize that treatment capacity is a function of the tank volume to contractor ratio, and therefore the parameter optimized was not recognized in the art to be a result-effective variable.). See also In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) (prior art suggested proportional balancing to achieve desired results in the formation of an alloy).

Based on the above, neither the time (greater than 4.5 hours) nor the disclosed speed appear to be inventive. Although Applicants may have discovered a new and unexpected result for whatever furnace construction, preform size, preform density, temperature, etc. were used. The claims are not limited to the experimental conditions

used to achieve the data. Rather the claims are directed to all/any preform and furnaces of any size, temperature, composition, density, etc.

It is well established that the evidence relied on to establish unobviousness must be commensurate in scope with the claimed subject matter. See *In re Kerkhoven*, 626 F 2d. 846, 851, 205 USPQ 1069, 1072-1073 (CCPA 1980) and *IN re Clemens*, 622 F.2d 1029, 1035, 206 USPQ 289, 296 (CCPA 1980).

Given the above teachings in the secondary references, it would have prima facie obvious to employ optimum or workable conditions, including those claimed, in the process of Kamio. *In re Boesch,* 617 F.2d 272,276 (CCPA 1980) ("[D]iscovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art."); *In re Aller,* 220 F.2d 454, 456 (CCPA 1955) ("[I]t is not inventive to discover the optimum or workable ranges by routine experimentation."). The Appellants have not shown that the claimed conditions are "critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range." *In re Woodruff* 919 F.2d 1575, 1578 (Fed. Cir. 1990).
Accordingly, based on the totality of record, Examiner finds that the preponderance of evidence weighs most heavily in favor of obviousness
within the meaning of 35 U.S.C. § 103(a).

Claims 4-6: the claims do not limit how large "large diameter" and "large mass" are. It is deemed that these limitations are met, because the diameter is larger than that of a

hydrogen atom. And the mass is large because it is larger than the mass of a hydrogen atom.

Claim 7: it would have been obvious to make the preform as long as desired – depending upon the amount of fiber desired.

Claims 8 and 10: as indicated in Sarkar at page 9, lines the 26-32: the downfeed rate is a critical parameter, and indicates as the preform increases in size, the slower rate. It would have been obvious to perform routine experimentation to determine the optimal downfeed rate, depending upon the size of the preform and the composition of the glass.

Claim 9 is clearly met

Claim 11: 1) it would have been obvious to make the furnace as large or as small as desired, depending upon the amount of fiber needed. Examiner notes that there is no boundary conditions indicated for what is or is not a "preheating section". That is, given that the sintering occurs at say 1700C, and the top end is near room temperature, then there would be a thermal gradient progressing up the furnace tube. Thus there would be a location at 1200 C, and another at 1100 C, and one at 343.5 C, etc. One could say that the portion that goes from 350C to 850 (i.e. arbitrary temperatures) is a “preheating region” because it serves to heat the preform from about 350 C to about

850 C. OR one could say the slightly longer portion (from 350C to 950 C) is the preheating region. That is one can choose any 400 mm section above the heating furnace and designate it as a “preheating section”.

In other words the term “preheating section" is given its broadest reasonable interpretation as being 'any section or subsection or portion or subportion, that was previously heated to a temperature above room temperature, or is capable of heating something from a low temperature to a temperature near the sintering temperature.' Examiner understand that the present specification discloses specific embodiments for 'preheating section' which are narrower in scope, however since applicant has not limited the claims to such a section, it is presumed applicant does not intend the claims to be interpreted so narrowly. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Thus substantially any 400mm length above the furnace will read on the claimed preheating section.

Claim 14: it would have been obvious to have the preform at room temperature prior to beginning the process, depending upon how much an inventory of unsintered preforms are available, or if one purchases unsintered preforms and has them shipped to the factory.

Claim 15: it is deemed that the Kamio's insulation surrounds and upper portion in as much as applicant does. For example , it surrounds the 90% uppermost length of the tube.

Claims 16-18: it would have been obvious to make the preform as large or as small as needed, depending upon the amount of fiber needed.

Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamio US 2002/0056292 in view of Sarkar 4599098, Walczak 2003/0221459, Glodis 6105396 and Shimotakahara 2003/0084686 as applied to claim 3, above, and further in view of Chervenak 5558692.

Figure 4 of Kamio discloses eccentricity (i.e. core deformation ratio) that are all less than 0.0075. But no displacement ratio is disclosed. CHervenak discloses that fiber geometry must be controlled to high tolerances and that a 0.1 mm deviation in a preform can cause an out of tolerance fiber, and that concentricity of core and clad are typically controlled geometry specifications (col. 1, lines 11-34). Examiner notes that this concentricity is the same type of porperty as the core displacement ratio because if the core is displaced from the center, it has reduced concentricity. IT would have been obvious to control the concentricity (i.e. core displacement) to be as small as possible, so as to accurately control the optical properties of the fiber made.

Response to Arguments

Applicant's arguments filed 2/27/2010 have been fully considered but they are not persuasive.

It is argued that the applied combination fails to teach or suggest the method. However there is no indication as to why applicant believes the combination misses a particular feature, or what that feature may be.

It is also argued that the combination fails to teach a technical advantage that is taught in the present application. However it is unclear what that technical advantage is. Examiner is unable to make a determination as whether the technical advantage is a secondary consideration that suggests nonobviousness.

It is also argued that the combination does not teach or suggest that the core displacement and the cross-section deformation is in any way affected or remedied by controlling temperature variations during sintering. Examiner fails to see the relevance of this because the claims do not require any step of controlling the temperature. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

As to the combination failing to teach or suggest an “exemplary” method. Again such limitations (like those of applicant’s exemplary method) are not required by the claims. The claims are much broader in scope; they are of a scope that include mundane methods.

The arguments regarding 6-12 hours are not understood. Claim 3 requires sintering lasts at least 4.5 hours. 6-12 hours clearly reads on this requirement.
It is argued that Kamio does not identify the structure of figure 1 as having the insulation. Examiner disagrees. One of ordinary skill looking at the figure would immediately infer that the structure shown covering 26 is insulation. First because [0048] of Kamio discloses insulation material, and second, one knows that the purpose of insulation is to prevent heat flow, and with Kamio one would understand that insulation is used around any surface where heat could escape.

From MPEP 2144.01 Implicit Disclosure:

"[I]n considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom." In re Preda, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968).

See also, *In re Fritch*, 972 F.2d 1260, 1264-65, 23 USPQ2d 1780, 1782-83 (Fed. Cir. 1992); *In re Sovish*, 769 F.2d 738, 743, 226 USPQ 771, 774 (Fed. Cir 1985).

It is still further argued that Examiner is failing to interpret the preheating limitation in view of the specification and the knowledge of one having ordinary skill in the art. Applicant points to [0014] - [0016] and [0001] – [0006] and points to no evidence regarding how "one having ordinary skill" would have interpreted it. Examiner has reviewed those paragraphs of the specification and could find nothing which serves to suggest applicant intended a special meaning for the "preheating region" nor anything

which suggests a meaning which would exclude the interpretation used by the Office. Applicant should more clearly point out the special meaning by page and line number.

The arguments (substantially all of pages 9-10) regarding the “exemplarily" claimed invention have been considered. They are not persuasive because the rejection is based on the entire scope of the claimed invention, not just the exemplary modes thereof. For example the arguments point out the combination lacks the exemplary setting a temperature to a sintering temperature. This is only exemplary, not required.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Hoffmann whose telephone number is (571) 272 1191. The examiner can normally be reached on Monday through Thursday, roughly 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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